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TWO DESTRUCTIVE RUSTS READY TO INVADE THE UNITED STATES[1]

THE application of the adage, "an ounce of prevention is better than a pound of cure," to the spread of crop pests has now became an established procedure for the United States through the activities of the Federal Horticultural Board. One of the difficult factors in securing success is learning about pests before they have been introduced or have attracted much attention. The hollyhock rust did not seem important in the mountainous regions of Chili, but it spread over all the world between 1869 and 1886, reaching the United States last, doubtless due to our "splendid isolation" from South America in transportation facilities. The Colorado potato beetle, as another instance, had to leave its native home and food plants to become a recognized menace to crops. It seems worth while, therefore, to call attention to two rust fungi that seem to possess the possibilities of great harm, but which have not yet invaded the United States proper.

The peanut crop is a large and growing industry of the southern states. There is a rust of peanuts widely distributed in South America, and becoming common in the West India Islands. It is usually designated as *Uredo Arachidis*, although a single collection from Paraguay would indicate that it should be called *Puccinia Arachidis*. It has been known to mycologists since 1884, but only very recently has it attracted attention of the cultivator. Specimens received by the writer from

[1] Presented to the American Phytopathological Society at the St. Louis meeting, January 1, 1920.

W. Robson, of Montserrat, British West Indies, show every leaf covered with the abundant brownish-yellow powder of the fungus. This was in September, 1916. Mr. Robson reports that some seasons it is a serious menace to the peanut crop in that island. Experiments for its control with Bordeaux mixture did not prove promising.

The life cycle of the rust has not been worked out, but as in the case of the chrysanthemum rust the cultivator will meet only with the uredinial stage, for only one kind of spore is produced on cultivated plants. The rust appears to be working its way northward, having been reported from Porto Rico in 1913, and from Cuba in 1915. It has not yet been reported from any part of the United States proper.

The second rust, to which attention should be called, is one on potatoes and tomatoes (*Puccinia Pittieriana*). Little is yet known about it. It was collected by H. Pittier on the wild potato in 1903 and again in 1904 on the slopes of the volcano Irazú in Costa Rica, at an altitude of about 10,000 feet, and was found again in the same region by E. W. D. Holway in 1916. It is mentioned in Pittier's "Plantas Usuales de Costa Rica" under the name *Uredo Pittieri*. More recently specimens have been examined by the writer sent by A. Pachano from Ambato, Ecuador, where it was found in 1918 in the gardens of the Quinta Normal on both potatoes and tomatoes.

For this rust only one kind of spore, the teliospore, is produced in the life-cycle, and these spores germinate at once upon reaching maturity, requiring no period of rest. The habit of the fungus and its mode of distribution are essentially those of the hollyhock rust. In gross appearance, as well as in other characters, it is very similar to the common rust on cocklebur.

The two rusts, to which attention is particularly called, have not yet demonstrated their full capacity for harm, but from their appearance, and from what we know of the introduction and behavior of similar rusts that are highly destructive, there seems little doubt that if once established in a region where suitable crops are extensively grown, they will prove most unwelcome to the cultivator.

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